

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : NG, Kee-Yean et al.)
Serial No. 10/798,477) Group Art Unit: 2879
Filed: March 11, 2004) Examiner: QUARTERMAN, Kevin J.
For: "LED DISPLAY WITH OVERLAY")

PRE-APPEAL BRIEF REQUEST FOR REVIEW

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Commissioner for Patents
P.O. Box 1450
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Filed Electronically

Sir:

Applicants respectfully request panel review pursuant to the Pre-Appeal Brief Conference Pilot Program. 1296 Off. Gaz. Pat. Off. 67 (12 July 2005, extended 10 January 2006). A Notice of Appeal and Request for one-month Extension Of Time to respond are filed herewith.

Status of Claims

Claims 1-20 remain pending in the application. Claims 1-20 stand rejected.

The Rejection of Claims 1-13 Under 35 U.S.C. §102(e) as Anticipated by Reeh is Deficient Because all Claim Limitations are not Taught in the Prior Art

Claims 1-13 stand rejected under 35 U.S.C. §102(e) as being anticipated by *Reeh* (U.S. Patent No. 6,576,930). Independent claim 1 and, by dependency, claims 2-13, recite "a fluorescent material overlay at a top end of the cavity [in which the LED is encapsulated], wherein the fluorescent material overlay has a thickness that substantially fully converts all light emitted from the LED to fluorescent radiation." As is well understood by persons skilled in the art, conversion from one wavelength to another occurs by light of one wavelength exciting the material to fluoresce or emit light at another wavelength. Applicants submit that *Reeh* does not teach: (1) an LED

structure having an overlay layer or conversion layer that converts all or substantially all of the light emitted by the LED, or (2) such a structure in which it is the selected thickness of the fluorescent material that results in conversion of all or substantially all of the light emitted by the LED.

With regard to argument (1), Applicants submit that *Reeh* discloses a layer that “converts a portion of the radiation of a longer wavelength into radiation of a shorter wavelength,” which “makes it possible to produce light-emitting diodes which radiate polychromatic light, in particular white light . . .” (*Reeh*, Abstract.) In other words, only a “portion” of the light emitted by the LED, i.e., some but not all wavelengths that are emitted by the LED, is converted to shorter-wavelength light as that portion passes through the conversion layer and excites it to fluoresce, i.e., emit light of wavelengths shorter than those that excited it to fluoresce, while the remaining portion of the light emitted by the LED passes through the conversion layer without exciting it to fluoresce, thereby remaining at the longer wavelength(s), unconverted. *Reeh* explains that the converted shorter-wavelength portion and unconverted longer-wavelength portion combine as they are emitted from the device to form white or other polychromatic light. Applicants have argued that *Reeh* et al. cannot be disclosing converting substantially all light emitted from the LED to fluorescent radiation if *Reeh* explicitly states, as quoted above, that only a “portion” of the light is converted, i.e., only a portion excites the layer to fluoresce, and a portion is intentionally allowed to pass through the overlay layer unconverted, without causing fluorescence, to achieve the goal of producing polychromatic, e.g., white, light.

With regard to argument (2), Applicants submit that *Reeh* does not teach or suggest that the thickness of the conversion layer has any effect on what portion of the light is converted or not converted. In the final Office Action mailed September 11, 2006, the Examiner stated: “[I]n response to applicant’s argument that *Reeh* does not teach anything about the thickness of the conversion layer, the Examiner respectfully disagrees. The Examiner notes that *Reeh* discloses that the conversion layer has a constant thickness throughout” Applicants submit that it is not whether the thickness is constant that matters but rather that the layer has a thickness selected to substantially fully convert all light emitted from the LED. Persons skilled in the art know

how to achieve such results by selecting a suitable thickness for the selected conversion layer material. *Reeh* not only does not disclose that one should select a thickness that causes the material to substantially fully convert all emitted light but in fact discloses that, whatever the material and structure that is selected, it should convert only a portion of the light. Not only does *Reeh* not disclose using the thickness property to achieve full conversion but *Reeh* discloses that full conversion is not to be achieved by any means.

The Examiner has also stated that “applicant’s use of the term ‘substantially’ in the claim leaves open the possibility that some light may escape unconverted.” Applicants respectfully submit that the term “substantially fully converts” is used here to mean that full conversion would be achieved but for undesired imperfections or impurities. It is well established that the terms “substantially” and “generally” in such a context mean as fully as can practicably be achieved but for unintended effects of imperfections or impurities. *See, e.g., Ex Parte Wheeler*, 163 USPQ 569 (PTO Bd. App.) (surface which is “substantially parallel” to a direction is for all intents and purposes disposed as closely parallel to such direction as possible); *Arvin Industries v. Berns Air King Corp.*, 188 USPQ 49 (CCPA 1975) (the term “generally planar” is intended to allow for irregular deviations from perfectly flat and not to broaden the scope of the recited element to encompass distinctly arcuate surface); *Verve LLC v. Crane Cams, Inc.*, 311 F.3d 1116 (Fed. Cir. 2002) (expressions such as “substantially” are used in patent documents when warranted by the nature of the invention in order to accommodate the minor variations that may be appropriate to secure the invention).

Clearly, *Reeh* discloses that more than an insubstantial or insignificant portion of the light remains unconverted so that, when it combines with the converted light, the result is polychromatic, e.g., white, light. In other words, a substantial or significant portion of the light is converted, and a substantial or significant portion is allowed to pass through unconverted. Applicants’ use of the term “substantially fully” is merely intended to secure the claim scope to which the invention as it has been disclosed in the specification entitles them by avoiding the argument of a potential infringer that there could be some wavelength of light, even if perhaps too weak to be readily detectable, that escapes without being converted. It must be recognized that no

physical process is perfect, and in this case, it can potentially be argued that some imperfection may result in the escape of some *de minimus* unconverted light. In view of the above, Applicants respectfully submit that the recitation in claim 1 of “substantially fully” is acceptable under the current state of the law to distinguish the invention from that which *Reeh* discloses.

With regard to independent claim 8 and, by dependency, claims 9-13, the Examiner maintains that Fig. 3 of *Reeh* is interpreted as though the portions identified by reference numerals 4, 6 and 29 were all parts of “a fluorescent material overlay at a top end of the cavity.” Applicants respectfully point out that portion 29 is a lens or cover glass, which is clearly shown in Fig. 3 as being a distinctly different element from that of the conversion layer (4,6); it is not within the broadest reasonable interpretation of the claim language to consider the lens as part of the “fluorescent material overlay.” Applicants submit that the lens is a separate and distinct portion or element of the structure, irrespective of whether the lens is integrally formed with the conversion layer. Accordingly, claims 8-13 recite that the fluorescent overlay is at a top end of the cavity, and only a portion of the overlay includes fluorescent material and another portion does not include any fluorescent material. When the lens is properly interpreted as something other than a part of “a fluorescent material overlay,” it can be seen that *Reeh* does not anticipate claims 8-13.

The Rejection of Claims 14-20 Under 35 U.S.C. § 103(a) is Deficient Because the Invention Would Not Have Been Obvious to a Person of Ordinary Skill In The Art in View of Reeh and Isoda

Claims 14-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Isoda* (U.S. Patent No. 6,774,406) in view of *Reeh* (U.S. Patent No. 6,576,930). For a rejection to be proper under 35 U.S.C. §103(a), there must be some suggestion or motivation to combine the references, and the combination must teach every element in the claim. The rejection is improper because neither of the requirements is met. Not only is there no suggestion or motivation to combine the references, but the combination would not yield what is claimed. Independent claim 14 and the claims that depend therefrom are not obvious in view of the combination of *Isoda* and *Reeh* for at least the reason that the references do not disclose or suggest “a single fluorescent

material overlay at a top end of the plurality of cavities.” In other words, there is one overlay that serves a plurality of cavities. Figure 3g of *Reeh* shows a structure in which a plurality of LED cavities are covered by a single “transparent sealing plate 16.” The transparent sealing plate is nothing more than a protective cover and does not include fluorescent material.

Rejection of Claims 14-20 under 35 U.S.C. §112, ¶ 1

Claims 14-20 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter not described in the specification. The Examiner stated that the amendment to recite a “single” fluorescent material overlay at the top end of the plurality of cavities was deemed new matter. Applicants respectfully submit that support is found at page 5, lines 4-12 of the specification: “One multi-LED display device includes . . . a fluorescent material overlay at a top end of the plurality of cavities.” The term “a fluorescent material overlay” clearly means “a (single) fluorescent material overlay” or “one fluorescent material overlay.” The article “a” connotes “one” or “single.” It is clear from the specification language that what was intended to be described is a structure having a plurality of LEDs and one overlay serving all of the LEDs.

Conclusion

In view of the above, it is clear that the grounds of rejection are deficient and improper. Accordingly, a panel decision that the rejections be withdrawn is earnestly solicited.

Respectfully submitted,
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